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PRINCIPLES OF REGULATION AND PRUDENTIAL SUPERVISION: SHOULD THEY BE DIFFERENT FOR MICROENTERPRISE FINANCE ORGANIZATIONS?

by

Rodrigo A. Chaves

and

Claudio Gonzalez-Vega

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Rural Finance Program
Department of Agricultural Economics
and
Rural Sociology
The Ohio State University
2120 Fyffe Road
Columbus, Ohio 43210-1099

Abstract

This paper offers the microenterprise development community a discussion of general principles of financial intermediary regulation and prudential supervision as well as an evaluation of how these issues are relevant for microenterprise finance organizations. Regulation, financial repression, prudential regulation, financial intermediary supervision, and internal control are defined first. A clear distinction among these concepts in critical for the analysis. The rationale for the regulation of depository financial institutions is provided next. The importance of a well-functioning payments system is not a sufficient reason for government regulation of financial markets. Opportunistic behavior on the part of depository institutions that results in excessive risks and instability, asymmetric information and moral hazard, and the associated negative externalities are at the core of the rationale for regulation. Consumer protection issues, in the presence of market failure, and conditions for the successful enforcement of financial contracts are emphasized. Regulation is desirable because, in the case of financial markets, preventive action is more cost-effective than remedial interventions. There are no standardized rules for optimum regulation. The authors propose seven regulatory "commandments," including competitive neutrality, minimum cost, specific objectives, incentive compatibility, and flexibility. Recognition of idiosyncratic risks is critical. Among frequently adopted instruments of prudential reguation described are the role of lender of last resort, deposit insurance, licensing, capital adequacy requirements, prohibition of loans to insiders, diversification rules, admissible activities, and enforcement powers. Preventive regulation is distinguished from protective regulation. Five supervision "commandments" are also proposed. Off-site and on-site methodologies for supervision are evaluated. Typical risks (credit, interest rate, liquidity, fraud) are described. Sui generis risks such as subsidy-dependence and donor-intrusion are added to traditional lists of risk. Difficulties of generalization for microenterprise finance organizations are discussed.

PRINCIPLES OF REGULATION AND PRUDENTIAL SUPERVISION: SHOULD THEY BE DIFFERENT FOR MICROENTERPRISE FINANCE ORGANIZATIONS?[1]

by

Rodrigo A. Chaves and Claudio Gonzalez-Vega[2]

I. Introduction

This paper offers the microenterprise development community a discussion of some general principles of financial intermediary regulation and prudential supervision as well as an evaluation of how these issues are relevant for microenterprise finance organizations. It presents the state of the arts as captured by the literature on regulation and supervision of depository institutions, it interprets and further develops the necessary conceptual framework, and translates it for microenterprise finance agencies.

Some definitions are provided first, followed by a discussion of the rationale for the regulation and supervision of deposit-taking organizations. Generally accepted principles of sound regulation and supervision are examined next. The most frequently adopted regulatory policies and instruments are briefly described. Finally, some insights are offered

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[2] The authors are, respectively, Graduate Research Associate and Professor of Agricultural Economics and of Economics at The Ohio State University. Both have been associated with the Rural Finance Program funded by the Agency for International Development through the Financial Intermediaries Resource Management (FIRM) Cooperative Agreement with The Ohio State University.

about the question of whether the differences between traditional financial intermediaries and microenterprise finance organizations are significant enough as to make it necessary to regulate and supervise the latter in a different manner.

II. Regulation, Financial Repression, Supervision, and Internal Control

While the way one defines **regulation** usually depends upon the context of the analysis, it is useful to first consider this term in its most ample sense. From this perspective, regulation refers to a set of enforceable rules that restrict or direct the actions of market participants altering, as a result, the outcomes of those actions. In this sense, regulation may be performed by the market itself, without government intervention or participation of other external force.

Efficient markets regulate the actions of agents by rewarding or penalizing them when, for example, they assume correct or inappropriate combinations of risk and expected returns or when they acquire reputations that lead other agents to transact or not with them. In principle, an efficient market guarantees that agents that make incorrect choices eventually go bankrupt and, as a result, have to exit the market.

This broad perspective is useful because such an ability of markets to regulate actions and enforce contracts should be taken into account in the design of government regulation. The more regulation by governments imitates regulation by efficient markets, the more effective it will be. That is, optimal regulation seeks to replicate perfect-market mechanisms (Klein and Leffler).

More narrowly defined for our purposes regulation refers, on the other hand, to the adoption of public policies that affect market outcomes through the exercise of some coercive government power. Enforceable public regulation substitutes the mandates of the government for market economic incentives. In this context, financial regulation becomes the coercive imposition of a set of enforceable rules that affect the behavior of agents in financial markets.

The replacement of market incentives with government rules and with restrictions on certain types of behavior that otherwise would be adopted, in the absence of the regulations, may have either beneficial or harmful effects on the performance of the economy. Since financial markets have been among the most regulated economic activities in every country in the world, it is easy to observe examples of both beneficial and harmful regulations on the basis of their effects on market efficiency.[3]

We refer to **financial repression** as those forms of regulation that distort financial markets and reduce the efficiency of their performance (Shaw, McKinnon 1973). Financial repression encompasses the set of government-imposed rules whose purpose is to tax or to subsidize financial transactions and otherwise distort the flows of funds and resource allocations away from what would occur when agents act on the basis of price signals (risk-adjusted returns).

Main examples of these distortions are credit subsidies, through loans granted at below market interest rates, mandatory credit allocations that target loans for particular

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[3] While this paper emphasizes the effects of regulation on market efficiency, beneficial and harmful outcomes may be identified with respect to stability, equitable distributions, and other policy objectives, as well.

sectors of the population, and other usury restrictions. Important tools of financial repression are, as well, confiscatory reserve requirements, the inflation tax, the overvaluation of the domestic currency, and excessive restrictions on entry to the market. The negative consequences of financial repression have been amply documented elsewhere (Fry; Adams, Graham, and Von Pischke).

Frequently, some of the most repressive regulations have been adopted with the best of intentions. Legitimate objectives are not enought to achieve the desired results, however. The choice of means also matters. Inconsistent means and objectives are a recipe for failure. For instance, excessive barriers to entry into the financial industry are frequently raised with the ostensible purpose of promoting a safe and resilient system. The contradiction between the objective and the instrument chosen for the regulation is clear when one takes into account that barriers to entry may prevent the failure of existing organizations, regardless of how inefficient they may be, by shielding them from the competition from new, more efficient, intermediaries. Potentially less efficient organizations are thus protected from the competition precisely from the types of intermediaries that the policy set out to promote in the first place.

The widespread repression of financial markets and the observed negative consequences from it suggest that inappropriate regulation may frequently be more dangerous than no regulation at all. What really matters are the actual effects of the regulations, not simply their objectives. Too often the good intentions of not well-designed regulations are eclipsed by their more powerful unintended evils.

Prudential financial regulation (or simply prudential regulation) refers, on the other hand, to the set of general principles or legal rules that pursue as their objective, and contribute to, the stable and efficient performance of financial institutions and markets. These rules represent bounds and constraints placed on the actions of financial intermediaries to ensure the safety and soundness of the system.

This type of government intervention should serve three basic policy goals. The first one, macroeconomic in nature, is to ensure the solvency and financial soundness of all intermediaries, in order to protect the stability of the country's payments system.[4] The second objective is to provide consumer protection against undue risks of losses that may arise from failure, fraud, or any opportunistic behavior on the part of the suppliers of financial services. The third goal of financial regulation is to promote the efficient performance of institutions and markets and the proper working of competitive market forces. Non-distorting financial regulation should be general (neutral) in terms of the nature of its mandates and induce all market participants to adhere to standard rules.

Achievement of the first two objectives of prudential financial regulation is simultaneous. Once the authorities provide consumers (e.g., depositors) with reasonable protection, the stability of the payments system is guaranteed.[5] The objective of promoting efficiency

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[4] The basic assumption is that an efficient payments system is a key determinant of processes of economic growth and of efficiency in resource allocation. Low-cost operation of the payments system is based on the public's trust which, in turn, depends on perceptions about stability and solvency of the institutions that manage the system.

[5] Some mechanisms of consumer protection, such as deposit insurance, may induce financial intermediaries to assume higher risks than otherwise and may force the authorities to bail them out. Stability is preserved, but at a high cost to the taxpayer, as in the case of the U.S. savings and loans.

implies, on the other hand, increased competition and the possibility that inefficient firms must exit the market. This means, in turn, that some consumers may be exposed to deposit losses and that some degree of instability may arise. These seemingly conflicting objectives must be balanced. The practical problem is to develop a system that allows the market mechanism to work, while keeping the system safe. This is not a trivial task.

Financial intermediary supervision (in contrast to regulation) consists of the examination and monitoring mechanisms through which the authorities verify compliance with and enforce either financial repression or prudential financial regulation. Supervision refers to the specific procedures adopted in order to determine the actual risks faced by an intermediary and, in general, for the review of regulatory compliance. Supervision of compliance with rules that promote stability and efficiency is both desirable and a key component of financial progress. Supervision of compliance with rules that tax and distort the system is **repressive supervision**.

Thus, it would be possible to observe highly efficient supervision efforts directed at making sure that the restrictions implicit in financial repression packages are enforced. This type of supervision will usually be damaging. When the supervision of the financial system is used to enforce financial repression, the more effective the enforcing mechanisms (i.e., the more likely it is to deter regulatory avoidance), the greater the potential damage of the repression. We focus here, instead, on the dimensions of financial intermediary supervision that seek the enforcement of legitimate financial regulation (i.e., **prudential supervision**).

Finally, **internal control** refers to the activities undertaken by the owners of a given financial institution, whoever they may be, in order to prevent, detect, and punish fraudulent

behavior on the part of the organization's personnel, as well as to ensure that the financial policies adopted by the owners are properly implemented. Internal control activities are, in general, in the private interest of the intermediary's owners and normally should not be an overriding concern for the supervisory authorities. In the case of several types of microenterprise finance organizations, however, their particular ownership arrangements may imply a special concern with internal control issues.

It is important for the analysis to keep the distinction among the concepts of regulation, supervision, and internal control clear, since each one leads to separate policy issues. Regulation requires, in most cases, a legal framework. Once the appropriate regulation is in place, supervision may be more discretionary in nature, however. Although these activities are complementary (e.g., regulation without supervision would be useless), unless they are analyzed in a separate manner it would not be possible to improve the design of each dimension. One should be able to separately identify the virtues and defects of each set of activities, in order to focus any corrective actions.

III. Depository Financial Intermediaries and the Rationale for their Regulation

Formal financial markets, at least in the developed world, are incredibly diverse in terms of the types of services offered, instruments available, and organizations that provide them.[6] These services range from traditional checking accounts to derivatives trading (e.g., options in futures markets), while organizational types range from small-town banks and

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[6] Substantial variegation may be found, as well, in the informal financial markets of the developing world (Adams and Fitchett).

credit unions to The Chicago Board of Trade and the like. For the purposes of this paper, however, we focus on the regulation of depository financial organizations only. These are the most common type of formal financial institution in the developing world.

Depository intermediaries may be distinguished from other financial institutions by three characteristics. On the liabilities side of their business, depository institutions issue fixed-value claims, more commonly deposits, to their customers. They are also characterized by large amounts of debt, in the form of deposits, as compared to equity claims. On the assets side, depository institutions hold a substantial portion of their portfolio in the form of non-marketable and risky securities, in particular business and personal loans.

These features of depository intermediaries, combined with the nature of a deposit contract, and the intrinsic complexities and imperfections of financial markets are what make the regulation and supervision of depository intermediaries necessary. Given that there is always uncertainty about the fulfillment of financial obligations, since they are promises to deliver at a future date, imperfections in financial markets arise from asymmetries of information among agents about the likelihood of the transactions being completed. It seems that most, if not all valid arguments in favor of the regulation of financial markets can ultimately be traced to combinations of these elements.

Traditional justifications for regulation have claimed that depository financial intermediaries (e.g., banks) are special because they are the holders of deposits from the public, the primary allocators of credit in the economy, the managers of the payments

system, and the main providers of portfolio management and risk-sharing services.[7] Depository financial intermediaries are particularly important in the developing countries, where other dimensions of financial markets are at best undeveloped or completely absent.[8]

Given the crucial services provided by depository intermediaries, their failure as a system would impose high costs on the economy at large. Breakdowns and other inefficiencies of the payments system would sharply increase transaction costs and cause a severe dislocation of productive activity, while attempts to prevent bank failures may impose high financial losses on the part of the government, when it has to bail intermediaries with solvency problems out. Dramatic examples of economy-wide crises of the financial system are the 1907 dislocation of the United States banking system and similar problems during the Great Depression of the 1930s. A more recent example has been the bail out, at government (taxpayer) expense, of numerous firms in the savings and loans industry. In the developing world, in turn, the bail out of major banks took place in Chile and in Uruguay, among other countries, in the early 1980s (Brock).

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[7] We ignore arguments in favor of regulation that are frequently the result of rent-seeking behavior on the part of the industry itself or some other vested interest (Stigler). We focus on the safety of the banks, disregarding aspects of monetary control as well. There is increasing agreement in the literature that public regulation of depository organizations is not needed to protect the purchasing power of money. Rather, we examine arguments for government intervention that we believe have some merit, and we particularly focus on the safety of depository organizations.

[8] In economies with low per capita incomes, open markets for common stocks, bonds, mortgages, or even commercial bills are typically insignificant. Instead, private financial savings are largely currency and deposits (McKinnon, 1989). Banks thus become the main formal source of funds (not owned by the producer) for the firm-household. This is not an imperfection, but rather a reflection of the cost of information and of the importance of economies of scale, of density, and of economies of scope in the production of financial services.

There is no question that depository intermediaries perform an array of important services and that the system's failure would have major negative effects on the rest of the economy. These characteristics are shared, however, by other industries that have not been as heavily regulated (e.g., transportation, information). Government regulation and supervision of the financial system must be justified beyond the simple "banks are special" argument.

The correct underlying reason for the regulation of depository intermediaries springs from the nature of the contracts between depositors and the owners of the financial organizations. These contracts are special because they provide ample occasion for **opportunistic behavior** on the part of the depository institution.[9] One consequence of this behavior is a degree of instability in financial markets higher than optimal. In short, legitimate reasons for regulation are related to consumer protection issues and respond to higher than normal levels of instability in the industry. Without regulation, an unduly high proportion of financial intermediaries would be likely to assume excessive risks.

The nature of deposits and similar financial contracts is that the borrower (e.g., the depository institution) is required to pay a contracted fixed amount to the lender (e.g., a depositor), usually at specified intervals, unless the borrower (bank) goes bankrupt.[10] In the absence of regulation (e.g., no capital requirements), when this happens the borrower (bank) pays less than has been contracted and perhaps nothing.

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[9] Opportunistic behavior occurs when an agent takes undue advantage of resources committed by another party who cannot pull them out before the end of the contract.

[10] For expository purposes, the term bank will be used here to denote any formal depository intermediary.

Once depositors have supplied the funds for a stated objective, bank managers and equity holders may be encouraged to greater risk-taking, since they are able to keep the extra rewards, while depositors bear the additional risk. Given the nature of fixed-interest rate deposits, the owners of the depository institution keep any extraordinary profits if the bets turn out well, but can go bankrupt and walk away from lost bets.[11] In short, in the absence of government regulation, the depository intermediary is the beneficiary of an unfair bet against its depositors and/or the government. The bank gets to keep all extraordinary profits, while not having to pay all of the costs, private and/or social, that arise from too risky lending.

This problem of **moral hazard** is also present between the bank, when acting as a lender, and its borrowers.[12] The same opportunity exists for the borrower to impose an unfair bet upon the bank. This is precisely the reason why banks do regulate (i.e., impose requirements upon) their borrowers. This is an example of regulation through the market. These requirements are voluntarily agreed loan covenants designed to ensure -- or at least increase the probability -- that the bankrupt state does not ensue.

Examples of such loan covenants are restrictions on dividend payments by the borrowing firm, requirement of a minimum equity investment in the project, and all forms

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[11] The problem is identical when a lender (bank) charges a fixed interest rate to a borrower, who may be inclined to assume additional risks and keep the extra returns, if things go well, or default, when things go wrong (Stiglitz and Weiss). The absence of capital requirements is thus equivalent to the absence of collateral.

[12] Moral hazard occurs when a party in a contract imposses additional risks on the other party, beyond those specified in the contract, and the victim does not have control over those risks but has to pay the consequences.

of collateral. In other instances (small borrowers), regulation through the market takes the form of collateral substitutes, such as interlinked transactions or the value of the borrower's reputation. These rules create incentives for the borrower to behave in ways that reduce the probability of a bankrupt state. In this fashion, the lender decreases the level of its risk exposure.

A market solution to the problem of discouraging opportunistic behavior by banks does not seem very plausible, however. While banks find it profitable to invest large amounts of resources in estimating the probability that a borrower will repay a loan according to the contract (**loan screening**) and in enforcing the loan covenants described (**loan collection**), individual depositors may find that similar efforts, with respect to the bank, are just too expensive relative to their investment (deposit). The market failure that results from the asymmetry of information between banks and depositors and the associated moral hazard on the part of the bank may be significant enought to warrant government intervention. The difficult question is how best to intervene.[13]

The possibility of opportunistic behavior is the source of several concerns. First, if the market fails, there may be important efficiency losses for the economy. Alternatively, if consumers are "naive," then issues of consumer protection arise.[14] The practical conse-

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[13] In some instances, the social costs of these interventions may still be too high, compared to their expected benefits. Existence of a cause may not be suficient reason to intervene. A cost-benefit analysis is required. For example, if it would cost one million dollars to supervise hundreds of small intermediaries whose total assets amounts to half-a-million, it would be better to leave the market alone.

[14] "Naive" or financially unsophisticated depositors may find it difficult to measure with any degree of accuracy the risks of depositing with a particular intermediary, even if they had access to the data needed. Such an evaluation may be too expensive for small savers

quence of any of these possibilities (correction of market failure and/or consumer protection) is that regulation is warranted.

In the case of microenterprise finance organizations (MFOs), concern with consumer protection increases if considerations of equity are incorporated into the analysis. It is reasonable to assume that depositors in MFOs fall in the lower-income percentiles among people in developing countries who possess financial assets. Losses from insolvency or from fraud would thus affect segments of the population with lower endowments of wealth and/or income.

A second type of concern that originates from opportunistic or morally hazardous behavior relates to the associated **negative externalities.** A negative externality arises because the total (social) costs of such behavior are greater than the (private) costs faced by the depositors and the owners of a failed depository intermediary. That is, the parties directly involved (owners and depositors) do not bear the full costs of their actions. Rather, these costs spill over to other agents in the market and to the economy as a whole.

There are several ways how these spill over effects can take place. It should be noted first that excessive risk-taking does not always result in the bankruptcy or insolvency of a particular bank. Sometimes bets and lotteries do pay. Nevertheless, even in those cases when a given bank takes high levels of risk that do result in high returns, rather than in insolvency, there might still be negative effects for the stability of the system. This would be the case of an intermediary that concentrates its lending portfolio in very risky clients who, as expected, would be willing to pay a high rate of interest on loans. This depository

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and microentrepreneurs.

intermediary would, in turn, be willing to pay marginally higher rates of interest on its deposits or, equivalently, incur in other promotional expenses (e.g., reduce transaction costs for depositors). In a competitive market, other intermediaries would be forced to match the increased deposit rates. This price race might take place up to a point where all banks would be forced to lend to increasing numbers of high-risk clients. The intermediary that initiated the process may have good luck, in the sense that its risky activities may earn it a high return, while at the same time forcing its competitors to assume higher levels of risk, thereby increasing the probability of insolvency for the system as a whole.

Another way how this negative externality takes place is traditionally recognized. The failure of an intermediary may cause a panic or run on the deposits of other intermediaries that otherwise have healthy financial situations. Runs on deposits are sudden, massive, and unexpected withdrawals, that endanger prudent and imprudent institutions alike. Even educated depositors, who have informed themselves about the financial health of the intermediaries where they have entrusted their funds, may find it rational to rush and withdraw their deposits. This is because individual depositors are not able to foresee the behavior of other depositors and it is rational for the well-informed depositor of a sound bank to withdraw funds when it is believed that others are doing so or are about to do so. This is an example of the prisoner's dilemma paradox applied to financial markets.[15] A welfare-increasing, cooperative agreement of not withdrawing all deposits at once is not enforceable or believable among depositors.

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[15] The prisoner's dilemma arises when players who would find it in their advantage to cooperate, choose strategies with lower pay-offs because of lack of credible commitments to cooperation.

The case for prudential financial regulation is almost complete. The question remains, however, as to why it is necessary to *ex ante* restrict potentially opportunistic behavior and other forms of mismanagement by depository institutions, rather than punish them *ex post*, as is the case with most transactions in the economy. That is, why is it necessary or better to implement (**preventive**) regulation of depository intermediaries, as opposed to resorting to common law tort suit and/or criminal law prosecution (**remedial**).

Common law is a remedial option in the sense that it represents a recourse for depositors when the intermediary fails to meet the terms of the deposit contract. Regulation is a preventive action in that it limits the range of permissible actions for the intermediary and specifies prohibited activities.

The choice of weights between prevention (regulation) and remedy (criminal prosecution and tort liability) must be faced every time that any framework to govern an economic activity is established. The optimal combination is not the same across different types of economic activity. The elements to decide between regulation and common law are:

(a) The size of the assets held by those who may commit the "crime," relative to the size of the damages (e.g., amount of deposits lost).

The smaller the amount of the assets held by the offender, the more should one rely on prevention. The combination of the limited liability, high levels of financial leverage, and capital specificity of depository intermediaries implies that the amount that owners stand to lose is rather small.[16] This supports the case for regulation. Only the protection

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[16] Here we argue that a bank's capital is specific because it is always more valuable in the bank's possession than elsewhere in the market. This is because bank capital is mostly made of bank loans and brand name. Loans have a significant component of management's

of the consumer against related damages has been considered here; the case for regulation becomes stronger when the costs from instability of the system are included as well.

(b) The possibility to suit (successful contract enforcement).

The lower the likelihood that remedial action be taken and/or granted by a court of justice, the more the system should rely on regulation. A first dimension of this problem results from the widespread harm caused by the opportunistic behavior on the part of the intermediary. There will usually be a multitude of comparatively small depositors, while the costs of **collective action** may be too high (Olson). Many individual depositors with small balances may thus not induce suit or may simply free ride on the efforts of others. A second aspect of this problem is that the causality of morally hazardous behavior in bank failures may be difficult to establish in a court of law.[17] The low probability of adequate contract enforcement supports the case for regulation as well (Shavell).

Any system is unlikely to be either entirely preventive or entirely remedial. It should be nearer the preventive end of the scale, however, the smaller its equity --relative to the intermediary's debt-- and the more specific the organization's capital is, the larger the number of depositors and the smaller their individual stakes, and the lower the transaction costs of monitoring relative to punishing (likelihood of successful contract enforcement).[18]

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private information, while brand name is worthless once the bank is bankrupt.

[17] In developing countries, the court system may be prohibitively expensive, corrupt, or inefficient, further reducing the probability for successful contract enforcement. Financial intermediaries also face these problems in their role as lenders.

[18] From a macroeconomic perspective, if individual depositors perceive that in order to protect the payments system the government will be responsible for the safety of their deposits, the authorities may be called upon to engage in costly bail outs. This guarantee is usually not desirable, but if the government is committed to it, then preventive regulation

When these general criteria for prudential regulation --from the point of view of consumer protection-- are applied to MFOs, the argument for a solution closer to the preventive end of the scale is even stronger. It may even imply that some MFOs should be regulated more closely than other types of depository intermediaries. This is because in some MFOs, those in control do not own the capital of the organization, and any negligent action on their part, leading to the loss of deposits, would be punished, at most, with the loss of their jobs.

The fact that MFOs are mostly located in developing countries may further imply that remedial action may be too costly or simply impossible for depositors. In several of those countries, the inputs and technology (laws, courts, experience) for remedial action may not be available. This may be the case with any regulatory and supervisory structure as well. The argument here is that under certain circumstances it may be easier to develop a regulatory framework than to adapt a whole judicial system to allow for remedial action.

IV. Principles for the Regulation of Depository Financial Intermediaries

There is a case for the prudential regulation of depository intermediaries. Much of the debate is not, however, about whether there should or should not be regulation, but about how much regulation to implement and of what kind.[19] Economic theory has yet to offer standardized principles for the determination of the optimal degree of regulation. One

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may be implemented in order to minimize the cost of the bail outs to the government.

[19] For the moment we abstract from very real and important political and institutional constraints that may imply difficulties in establishing an adequate regulatory framework.

reason is that such a formula may not even exist, since the optimal type and degree of regulation may be very specific, in terms of time, location, and even the particular institutional structure of the organizations to be regulated. The most that we can provided is a set of general principles or regulatory commandments.

The following are principles that should be included among these **regulatory commandments:**

(a) Regulation should attempt to minimize disturbances to the existing competitive balance among financial intermediaries.

This principle of **competitive neutrality** requires, among other things, that the regulatory environment provide all market players with a level playing field. No particular type of intermediary should be granted an advantage simply as a result of the name in its charter or from implicit --good or bad-- perceptions about its clientele or operations.[20] Financial institutions operating under the same or different charters should be able to find their comparative advantages in serving all possible market niches.

(b) The negative effects of regulation upon efficiency in the financial system should be minimized.

Efficiency of a financial system is a multidimensional concept. The first dimension is related to allocative efficiency. This requires that resources flow to the organizations that offer the highest prospective risk-adjusted rates of return. Second, operational efficiency refers to the consumption of real resources in the process of financial intermediation. As

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[20] For example, in several countries, cooperative banks are subject to less strict capital adequacy requirements than equivalent intermediaries, for entirely "political" reasons.

few resources as possible should be spent (low transactions costs). Finally, dynamic efficiency is the ability of the intermediaries to adapt over time to the needs of the users of the system. Good regulation would minimize the costs, both direct (e.g., compliance costs) and indirect (e.g., reduced competitiveness and innovation), caused by the external rules forced upon the system.

(c) The regulation of financial markets should not be used to promote the achievement of social objectives (e.g., poverty alleviation) or to provide assistance to particular sectors of the population or to priority industries.

In most cases, regulation directed to achieve these objectives falls into the category of financial repression, because it taxes the financial system (or some of its participants) in order to subsidize other sectors of the economy. In practice, these regulations have failed to achieve their objectives, but have imposed high costs on all market participants. Worthy social and political objectives may be best achieved (both in terms of effectiveness and of cost) through fiscal means (Gonzalez-Vega, 1976).

(d) The purpose of regulation and supervision should not be to avoid bank failures at all costs. Such policy objective is not attainable and to pursue it may induce severe negative effects.

There is no purpose in allowing inefficient organizations to continue to operate in the market. If an intermediary does not adopt the proper strategies, does not have the flexibility to adapt to changes in the environment, does not react to competitive attacks from its rivals, or simply its owners are not able to avoid malfeasance or incompetence on the part of their staff, then the role of the regulator is to make sure that the owners of the

intermediary replace the equity losses or that they exit the industry without damaging their depositors' interests or the stability of the market.

In effect, the policy of preventing **bank failures**, or of simply postponing them, has resulted in the reduction of competition and in the inefficiency of entire financial systems, while exerting significant pressures on the government's budget or Central Bank operational losses. The objectives of regulation and supervision should only be to avoid **unnecessary** bank failures and to minimize the negative effects of failures that must take place. One way to achieve these objectives is to make sure that those responsible for any failure, either because of fraud or of lack of financial skills, assume most, hopefully all of the associated costs, and that they are not able to transfer these costs to their costumers and/or to the government.

(e) Regulation must rely, as much as possible, on the self-interest of economic agents. Government regulation should simulate, as much as possible, the ability of the market to enforce contracts. In short, regulations that are **incentive compatible** are optimal.[21]

The main rationale for regulation springs from consumer protection concerns that arise from the need to curb the attractiveness of excessive risk-taking (i.e., opportunistic behavior) on the part of depository intermediaries and from the negative externalities associated with such behavior. In general, there are two possible ways to *ex ante* counteract *ex post* opportunistic behavior. The first one is to keep the discretionary powers of the

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[21] There is incentive compatibility when, given enforceable constraints, the agent voluntarily chooses the behavior desired because it becomes in its interest to do so.

intermediary within narrow and closely supervised limits. The second one is to rely on the self-interest of the intermediary, by introducing incentives that induce discretionary behavior that is consistent with the objective to reduce excessive risk-taking.

The second option relies on the possibility to externally and internally discipline agents (Holstrom and Tirole). Internal discipline would result, for instance, from a regulation that would require banks to keep a minimum amount of capital (i.e., a deductible). A sufficiently large deductible may induce a more prudent behavior on the part of management. External discipline is achieved by competition in relevant markets (e.g., take-overs by other shareholders or the market to hire and fire agents).

(f) The regulatory framework should not be static; it must recognize that there will inevitably be innovations frequently adopted to avoid the original regulation. The regulatory environment should evolve accordingly (i.e., be flexible over time).

Efforts to alter market solutions through coercive regulation induce responses in the form of innovations to avoid the initial regulation. These innovations may take the form of new products and services (e.g., off-balance sheet liabilities) or lead to product substitution. The efficiency of the process of prudential regulation is reduced as innovation spreads in the market.

Innovation tends to spread rapidly in financial markets, since both types of innovation, product and process, are easily replicated by competitors. Products are openly available and are not protected by patents, while processes are copied through employee mobility and/or originate in widely available technology (computers, telecommunications).

Regulation may become increasingly less effective in the presence of avoidance, unless regulators respond quickly in order to close the loopholes created by innovation.

Most likely regulators react to change more slowly than the organizations that they regulate and supervise. Most political systems do not have built-in incentives that promote rapid responses. Eventually, though, a process of re-regulation takes place and the cycle is repeated. This is what Kane (1977) identified as a process of **regulatory dialectic**. Clearly, realistic regulation and supervision have to develop alongside these market forces. This is necessary in order to ensure that regulation remains effective, that potentially-risky avoidance innovations do not become a problem, and that the benefits of competition are harvested.

(g) The regulatory framework should be flexible enough to incorporate the fact that it may be necessary to regulate different intermediaries in a different manner.

The differences that may be important for regulatory purposes would have to do with the environment in which the intermediaries operate, the markets niches they serve, and their institutional design. By institutional design we mainly refer to property rights and rules of control over the organization's assets. For example, a cooperative's assets are controlled by the system of one-man-one-vote, while the corresponding rule for a commercial bank is one-share-one-vote. Here we assume that the organizational types and charters (e.g., cooperatives, NGOs, commercial banks) found in a given financial market are exogenous or independent of regulation. In several cases, regulation and taxation allow for charger arbitrage and for the existence of some organizations that would not exist in the absence of asymmetric regulation.

The need for flexibility arises because such differences may imply idiosyncratic risks for alternative intermediaries. An **idiosyncratic risk** occurs when a particular intermediary faces a source of potential variability in its net income and in the value of its equity capital (i.e., the possibility of insolvency) that does not affect other types of intermediaries in the same manner. For instance, there is idiosyncratic risk when the same type of risk is more intense (i.e., a higher expected value of bad outcomes) for a given type of intermediary or when it can be reduced, through diversification or other means, more efficiently by other intermediaries.

Idiosyncratic risks across economic environments (e.g., countries or regions) do not allow for the exact replication of regulatory frameworks. For example, the regulatory framework in a country with well-developed liquidity markets should be concerned, mostly, with solvency. Liquidity reserves, on the other hand, should be an overriding regulatory concern when those markets do not function efficiently.

There may be idiosyncratic risks that originate from the particular market segments or niches served by an intermediary.[22] Intermediaries specialized in the provision of housing loans would probably face consistently higher exposures to interest-rate risk -- as a result of term arbitrage -- than finance companies basically specialized in short-term lending. The regulatory framework must be flexible enough to accommodate such differences, in order to allow institutions that operate under different possible charters to find their

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[22] Sometimes, consistent risk differentials are the result of bad regulation itself, such as rules that force certain intermediaries to grant credit only in specific geographical locations and/or for specific purposes (e.g., the savings and loans industry in the United States). These regulations do not allow intermediaries to sufficiently diversify their risks.

comparative advantages in serving all possible market niches. Even intermediaries with the same charter should be able to find what sectors or segments of the market they can serve at a lower cost and, therefore, more profitably than their competitors. The role of regulation is to ensure that the appropriate precautions are taken in each case.

Idiosyncratic risks may also arise as the result of the institutional design of the intermediaries. For example, some intermediary types (e.g., cooperatives, NGOs) have a diffused ownership structure, which may cause "owners" not to provide an optimal amount of oversight of their operations. The importance of acknowledging these differences is more than simply academic; they have vital policy implications. Not only prudential supervision would be better (i.e., there would be a lower probability of failure), but more efficient as well (i.e., more cost-effective) when these distinctions are recognized.

The fact that some idiosyncratic risks may call for differentiated regulation is not contradictory with the principle of competitive neutrality stated before. Equality of treatment is not assured by treating unequals equally. The idea is to allow for a diversity of organizations compatible with the diverse needs of the market, but at the same time to assign the regulatory burden with maximum efficiency.

V. Frequently Adopted Instruments of Prudential Regulation

The types and scope of government regulation of depository intermediaries vary significantly across countries. In general, prudential regulations can be classified into preventive or protective. Preventive regulations attempt to control the risk exposure of the system in order to reduce the probability of failure in the aggregate. Protective regulation,

on the other hand, focuses on assuring depositors that they, as individuals, will not face losses in case a particular intermediary experiences financial difficulties. The main purpose of protective interventions is to avoid runs on deposits as a result of bank failure. This is achieved by removing the incentive for a depositor to be the first one to withdraw funds from a troubled intermediary.

The following is a brief discussion of the most commonly observed regulations. **Protective** regulatory measures are examined first:

(a) The role of Government as a lender of last resort:

Governments, most frequently through central banks, may intervene in financial markets to provide liquidity loans to troubled intermediaries. This should be differentiated from the open market operations of the central bank aimed at increasing the liquidity of the entire system, for macroeconomic reasons. We refer here to liquidity assistance to individual organizations.

The idea behind the **lender-of-last-resort** facility is that there may be intermediaries that are temporarily illiquid but that are solvent and fit for long-term survival. The implicit assumption is either that liquidity markets do not work properly or that the authorities possess a better judgement than the market about the soundness and possibities for long-term survival of individual organizations. With properly functioning markets, liquidity should not be a problem as long as the intermediary is solvent.[23]

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[23] Although liquidity and solvency are conceptually different, in practice it may be difficult to distinguish among them. Unwise liquidity management implies the risk of corresponding adjustment costs that may endanger solvency.

(b) Deposit Insurance:

The main purpose of **deposit insurance** is to remove the depositor's incentive to be the first one in withdrawing funds from a troubled intermediary. This is thought to increase the stability of the system. The removal of the post-deposit incentive to run is one of the possible effects of deposit insurance. Deposit insurance may also imply, however, negative changes in the pre-deposit behavior of individuals. In particular, savers may have less incentives to verify the financial health of the intermediaries where they place their funds, if they feel protected by the insurance.[24]

Protective regulatory interventions necessarily require an adequate framework of preventive regulations and an efficient system of supervision. For this reason, protective interventions should be the last step, if any role is assigned at all to them, in the development of a prudential framework. The establishment of protective measures in the absence of prudential regulation and supervision removes discipline from the market and encourages risks that may be greater than those resulting from the absence of regulation.

It is better to have no regulation than to adopt protective regulation alone. In particular, deposit insurance without a good supervisory system removes the cost for a bank to increase risk (i.e., it eliminates market discipline). It would be impossible, for example, to calculate risk-based premiums. Such a reduction of the cost of risk for the banks would have the effect of making them less safe than otherwise, exactly the result opposite to that sought by prudential interventions.

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[24] As Kane (1985) has shown, in the presence of deposit insurance the owner-managers of banks may assume higher risks than otherwise, as well.

There are two possible approaches to protective interventions. The discretionary approach consists of interventions that depend on the judgement of the authorities. This is the "not for sure" type of intervention. The government may or may not bail out depositors or may or may not act as a lender of last resort. The second approach are contractual interventions. This is illustrated by institutionalized deposit insurance arrangements.

Each approach has its own advantages and disadvantages. The main advantage of the **discretionary** approach is that it does not completely remove market discipline. The fact that the intervention may or may not occur implies that some incentive for depositors to monitor risks remain. On the other hand, its main disadvantage is that it may create an asymmetric treatment of intermediaries, which may result in implicit subsidies for some of them (i.e., lack of competitive neutrality). The classical example of this is the "too big to fail" hypothesis, which argues that the regulatory authorities are less likely to allow the failure of comparatively large banks. Somehow related to this asymmetric treatment of intermediaries is the danger that politically powerful intermediaries may enjoy better government protection under the discretionary approach.[25]

The main disadvantage of the **contractual** approach is that it completely removes market discipline and thus creates incentives for risk-taking on the part of the depositors and the intermediaries. Its main advantage is that it removes uncertainty, thereby decreasing the possibility of a run on deposits.

Among the most frequent **preventive** regulatory measures are:

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[25] In several countries this is the case of government-owned as different from private banks. This lowers the cost of funds mobilization for the public banks below the financial costs of their private competitors.

(a) Licensing of financial intermediaries:

Almost every government has restricted the entry of firms into the formal financial industry, by requiring them to obtain a license or legal **charter**. Although the existence of this requirement is almost universal, the reasons to demand it may differ. In many cases promotion of the soundness of intermediaries is nothing but an ostensible reason for restrictions to entry, when in fact the true purpose of the regulation is to restrain competition and to influence the structure of the markey by creating, through the barriers adopted, monopolistic rents for the industry's incumbents. This hidden purpose is illustrated by requirements to demonstrate "need" for additional intermediaries, before a license is granted.

From a purely regulatory perspective, the only purposes of any licensing requirement should be to ensure an adequate capitalization and availability of sound management (e.g., competence and moral standing), not to limit entry and reduce competition.

(b) Capital adequacy:

Regulatory requirements dealing with capital adequacy have two different dimensions. The first one is a pre-established minimum level of required capital for entry. This is an absolute amount of money. The second dimension is to require the maintenance of some solvency or leverage ratio. This is a minimum proportion of the assets of the intermediary.

Capital adequacy regulations are probably the most important component of any regulatory framework, because of capital's key role in the operation of a financial intermediary. The most elementary definition of equity capital is the amount of money that is left for the owners of the intermediary in the event the organization is dismantled, after all

creditors are paid off.[26] Equity capital are liabilities that cannot be withdrawn at all by the owners and on which it should not be necessary to pay a fixed or contracted return.

As such, capital plays two roles. The first one is the traditionally recognized function of buffer funds, to absorb losses on the income account. For moderate losses, capital would allow depositors to redeem their claims at full value. Nevertheless, due to high levels of debt relative to capital on the liability side of depository intermediaries, capital does not represent a significant protection. This is because small losses, relatively to assets, may wipe capital out.

The authentic function of capital in terms of consumer protection is to perform the role of a deductible, in the sense of an insurance policy. Equity capital is the amount that would be lost by the owners of the bank in the event of bankruptcy. The larger the deductible (i.e., expected owner losses), the more cautious the behavior of the intermediary (i.e., less risk assumed). In short, from a regulatory perspective, the main function of equity capital is to induce compatibility of incentives (i.e., reduce moral hazard) between the depositors and the owners of the intermediary. Given a sufficiently large deductible, the interests of owners and of depositors would be similar and the former would behave accordingly.

Capital adequacy regulations in the form of some minimum solvency or maximum leverage ratio are incentive compatible. This makes for sound regulation. On the other hand, capital adequacy requirements as an absolute minimum amount of equity to enter the industry are, conceptually, anti-competitive regulation. The only justification for this latter

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[26] Under a regime of limited liability, this amount is the maximum loss that may be incurred, since the owners do not have a personal liability beyond their equity stakes in the firm.

type of regulation is a pragmatic one, that has to do with the difficulty of supervising large numbers of intermediaries with small-scale operations. Actually, the reduced competition in the industry raises the amount of capital, as the value of the established firms increases (i.e., hidden reserves). These reserves represent a transfer from the clients to the owners of the existing firms generated by the inefficiencies resulting from restricted competition.[27] In most of these cases, the resulting increased stability may be too expensive in terms of efficiency losses.

There are two general problems with the practical implementation of capital adequacy ratios. The first problem has to do with the definition of capital and with its measurement. Capital as deductible should include all hidden reserves, including the value of the charter or franchise of established firms, under restricted competition, and an appropriate market valuation of assets.

The second problem is the appraisal of the intermediary's off-balance sheet liabilities. These are usually contingent liabilities, such as guarantees or related contracts, that have not affected the organization's balance sheet yet but that may generate a claim on the assets of the organization in the future. Although they do not appear on the balance sheet, these commitments represent actual contractual obligations that imply risks. Off-balance sheet items are one of the most common instruments of regulatory avoidance with respect to capital adequacy requirements.

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[27] The market value of the franchise when competition is restricted is given by the present discounted value of any monopolistic quasi-rents resulting from the industry's structure.

One of the interesting challenges in the regulation of MFOs is that some of these organizations have property rights structures that preclude accounting capital to perform the function of a deductible. This is because these intermediaries do not have owners in the traditional sense. This may suggest the need for a different type of regulation for some MFOs.

(c) Prohibitions of loans to insiders:

One common and very important regulation of financial intermediaries is to limit the amount of loans that may be granted to bank **insiders** (e.g., large shareholders, related companies, employees). The usual argument for this regulation is that such credit may not meet the same standards as loans extended to other borrowers (Polizatto, 1989). That is, loans to insiders may be granted on the basis of criteria different from the maximization of the risk-adjusted returns for the intermediary. Insider loans are usually not properly collateralized.

More importantly, credit to insiders may be used by the intermediary's owners to recapture their equity capital, eliminating, thereby, its function as a deductible. In the event when insiders receive loans equivalent to a large portion of their capital, they are able to escape their share of the losses from bankruptcy, by falling in default on the loans they have received. This possibility of redeeming equity capital through loans eliminates the incentives for not assuming excessive risk.

Restrictions on credit to insiders are necessary for the successful enforcement of any capital adequacy regulation. The general rule should be to never allow a bank to lend to its owners, be it directly or indirectly. This is one of the regulatory challenges, however, in

the case of client-owned depository intermediaries (e.g., credit cooperatives, village banks), since these organizations mostly lend to their owners. This would represent one example of the need for idiosyncratic regulation.

(d) Diversification rules:

This regulatory constraint is aimed at preventing an intermediary's loan or investment portfolio to be concentrated around a few individual costumers or group of costumers that constitute a single economic risk, through the positive correlation of the outcome of their activities.

Although the precise form and content of this regulation varies significantly, it should stipulate limits on loans, investments, and exposure (e.g., foreign exchange risks). These limits should not be set in terms of absolute amounts; rather, the actual amount that any intermediary may risk in a single gamble should be a function of its equity capital.

Absolute restrictions on the amount to be lent to a single costumer are, sometimes, used to segment the market and to limit competition. Restrictions as a proportion of assets, as opposed to equity capital, are an incentive for intermediaries to increase their level of leverage, in order to augment the acceptable limits on loan size and concentration. This has obvious negative implications, since the role of equity capital as a deductible diminishes.

Anti-competitive regulations frequently impede adequate risk diversification. Examples of these negative regulatory constraints are restrictions on geographic expansion and on product diversification. This has been the case, unfortunately, of many development financial institutions and may be the case of several MFOs.

(e) Regulation about admissible activities:

Some countries have tried to separate banking activities from non-banking areas of business. The practical implementation of the regulation has been to prohibit or restrict equity investments by depository intermediaries. Two traditional and different arguments have been advanced in favor of this type of regulation. The first one is not prudential in nature and has to do with preventing the concentration of economic power. The second argument, based on prudential considerations, is that common stock or equity investments should be precluded from the portfolios of depository intermediaries because they are too risky.

This constraint is a good example of the need to adopt different regulations for diverse market environments. In countries with developed capital markets, the availability of an additional asset (stocks) should be beneficial for bank portfolio performance, from the perspective of risk-return efficiency. In such countries, the supervisory authority is in the position to monitor the market price of these assets and thereby portfolio performance. This is acceptable as long as the intermediary does not operate the other business itself.

Developing countries, on the other hand, do not have properly-functioning capital markets. This implies that it may be impossible or prohibitively expensive to monitor bank portfolio performance when such portfolios include stocks or equity investments of any kind. In these circumstances, such investments should be avoided. The problems are further compounded in the case of direct investments. Credit cooperatives in developing countries, for example, have invested in and managed all sorts of businesses (e.g., grocery stores) side-by-side with their financial intermediation operations. This has been an important source

of financial distress for these organizations. Multi-activity seriously endangers the possibilities for effective supervision and risk assessment of financial intermediaries.

(f) General powers for the enforcement of regulation:

The regulatory framework should provide the supervisory agency with enough authority to perform its mandate. Among the most frequently observed general powers granted to regulators are the ability to require standard formats for the reporting of financial performance, to order cease and desist, to restrict or suspend dividend payments and/or to force intermediaries to create appropriate reserves. The need for most of these powers originates from the requirements of the actual implementation of the supervisory activities.

VI. Principles for the Prudential Supervision of Depository Financial Intermediaries

Prudential supervision refers to the process of enforcing the regulatory framework. Efforts are aimed at monitoring and directing individual intermediaries in order to ensure that they obey regulatory requirements and do not behave imprudently. It is clear that there would be little advantage in having good regulatory policies in the absence of efficient enforcement mechanisms.

Since the main purpose of regulation is to reduce risk and its negative effects, the supervisory authority's practical challenge is to design indicators to measure these risks, to monitor and analyze the impact that external events or exogenous shocks might have on the performance of financial markets and intermediaries, and to make sure that the data fed into the monitoring system are accurate and do reflect the actual situation of the intermediary.

The main goal of the supervisory system should be, therefore, to work as an **early-warning mechanism** about changes in the probability of an individual intermediary becoming illiquid, insolvent, or both. This requires prediction of future events, both exogenous to the intermediary and arising from its own actions, and of how these events may affect the financial health of the organization. Since such predictions are by nature difficult, what most supervisors do is to monitor the actual performance of intermediaries and make inferences about future risks from observed past tendencies, in the hope that changes are sufficiently slow to allow timely interventions.

As it was the case with regulation, there is no easy recipe to follow for sound supervision. Actually, the very nature of banking risks makes their measurement very difficult. Even well-trained and experienced supervisors issued positive reports on the Continental Illinois Bank only a few months before it had to be taken over by the Federal Deposit Insurance Corporation. There are, however, some basic principles that, in consistency with the previous section, will be called supervisory commandments.

The following are some of the principles that should be included among these **supervisory commandments**:

(a) Supervisory activities should not be used to enforce rules different from those related to prudential regulation.

In some countries, bank supervisors are asked to verify compliance with tax laws, foreign exchange controls, Central Bank reserve requirements, and the like. Aditional mandates affect the ability of supervisors to concentrate on their main task of risk assessment

and control activities, while creating additional incentives for the regulatees to hide information.

(b) Supervisory authorities should not manage intermediaries.

The line should be drawn between supervision and total control. Supervisory activities and management tasks should be kept separate. Supervision should attempt to make intermediaries comply with a comparatively small number of clear rules. Traditional supervisory activities should have nothing to do with personnel management, pricing policies, or even technical operational advice to financial intermediaries. If prudential regulation requires that intermediaries must have at least a given percentage of their assets funded with equity capital, then prudential supervision should make sure that the intermediaries comply with such a restriction. Other issues of internal control should be of no particular concern, unless there are problems with the specification of property rights in the organization.

(c) Supervision requires of constant and frequent monitoring. There should be no extended intervals between supervisory activities.

Given the nature of financial contracts, which imply the exchange of money (purchasing power now) for promises of future repayment (usually documented, but promises nonetheless), the risks involved in such contracts change constantly. Thus, the probability that any intermediary will be able to honor its deposits may change almost immediately. A single large loan or the adoption of a foreign exchange position may dramatically change the financial position of an intermediary within hours of a supervisory visit.

(d) Supervision of financial intermediaries should have a significant component of prediction. The assessment of the risk levels faced by an intermediary should not be based on past performance only.

Effective supervision requires a better **predictive ability** than that provided by the traditional methods of bank monitoring. One suggestion is to undertake simulations about the performance of intermediaries under different reasonable scenarios. That is, one important component of prudential supervision is to answer, in a systematic way, questions such as "what would happen to intermediary A (or group of intermediaries B) if the market interest rate changes by so many percentage points?"[28] The more efficient the predictions of the supervisor, the more effective the early-warning system.

(e) Prudential supervision, as the process of enforcing the law and regulations, should show a high degree of flexibility and neutrality toward charter arrangements and the market segments served by particular intermediaries.

Questions such as "how does a bank examiner estimate the necessary provisions for loan losses in an intermediary whose portfolio is backed by character references only" suggest the need to differentiate across organizations. Clearly, this evaluation process must be different than in the case of a commercial bank, whose loan portfolio is collateralized with assets for which it would be easier to get market values.

By the same argument, an appropriate regulatory environment should be flexible enough to understand that a delinquency rate, however measured, of say 15 percent, in an

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[28] The case could be made that the cost for the American taxpayers of the savings and loans crisis could have been significantly reduced if U.S. banking supervisors had simulated industry and individual bank performances assuming a decrease in real estate prices.

intermediary that makes very small loans and charges sufficiently high interest rates, may be more satisfactory than a rate of 5 percent at a commercial bank.

The importance of flexibility goes beyond the need to measure different levels of risk across different organizations. Among other things, supervision should be responsive to change and innovations. Riskier intermediaries would simply be required to hold better provisions (i.e., would not be allowed to cash out bets). In any event, the objective of regulation should be to avoid excessive or undue levels of risk in financial transactions; not to assure complete certainty, which is anyway impossible. Regulation should in effect allow different degrees of risk, so that informed agents find an opportunity to choose according to their risk-return preferences.

VII. The Methodology of Supervision

An efficient mechanism for the surveillance of financial intermediaries should have two basic components. Efficiency refers here to the maximization of the probability to discover regulatory violations at a minimum cost. The first component would be an early-warning system based on data reported to the supervisory authority by the intermediaries themselves. This is the **off-site** component of the supervisory structure. Its main purpose is to provide a frequent depiction of the financial health and risks of each one of the intermediaries supervised.

The early-warning system may use standard bankruptcy models to identify those intermediaries likely to fail in the future. Most of these models are based on multivariate discriminant analysis, using a series of financial ratios as predictive variables. These

statistical models, when properly applied, can be very efficient in predicting bank failure. In effect, Bengston et. al. report that these models are almost as effective in such predictions as the more expensive bank supervisor visits.

The second component of any supervisory system is a program of actual visits to the intermediaries; this is the **on-site** element of supervision. On-site supervision is necessary in order to practice those inspections that, because of their nature, cannot be performed by an off-site analysis (e.g., quality of internal control) and to verify that the data fed to the off-site surveillance system are correct.

It should be clear that if the supervisory authority had perfect information, visits by field personnel would occur only when special interventions are necessary. The need for such interventions would have been indicated by the monitoring or early-warning system (off-site). Any resources invested in a monitoring system would be wasted, however, if the supervised intermediaries are able to hide possible sources of risk and face a low probability of being caught when doing so. On-site supervision must, therefore, verify the accuracy of the data fed into the surveillance system. The possibility of being caught would be a deterrent for most intermediaries in their attempts to disguise their financial situation.

VIII. Risks of Financial Intermediation

The dominant theme of this paper has been the control and supervision of the risks assumed by depository financial intermediaries. Risk refers to the probability that undesired events may occur, in particular the failure (insolvency) of an intermediary. Insolvency, on the other hand, results basically from negative variations in net income.

The most common sources of insolvency for financial intermediaries are the following:

(a) **Credit risk:**

Whenever a financial intermediary acquires an earning asset, it assumes the risk that the borrower will default, that is, not repay the principal and interest according to the contract. Credit risk is the potential variation in the intermediary's net income and in the value of its equity resulting from this lack of or delayed payment of the obligation. Different types of assets exhibit different probabilities of default. Typically, loans carry the greatest credit risk.

(b) **Interest rate risk:**

This risk results from the potential variability in an intermediary's net interest income and in the value of its equity capital due to changes in the level of market interest rates.

Interest rate risk has been found, together with lack of appropriate diversification, to be the most common source of bank failures in developed countries. This risk originates from the mismatch of the term to maturity of assets and liabilities with fixed interest rates (i.e., from term transformation). When interest rates rise, intermediaries must pay more for current liabilities, while not necessarily being able to adjust their returns on earning assets. The obvious consequence is a reduction in net interest income that might result in current operational losses and eventually in insolvency.

(c) **Liquidity risk:**

Liquidity of an asset refers to the owner's ability to convert the asset into cash, with minimal loss from price depreciation and at low transaction costs; that is, the ability to

rapidly sell an asset without incurring in significant losses. Liquidity risk is the variation in net income and in the value of equity caused by a financial intermediary's difficulty in obtaining cash at a reasonable cost, when it is needed.

(d) **Internal control or fraud risk:**

Internal control risk refers to the variation in net income and in the value of equity capital that results from the misappropriation, theft, or processing errors against the intermediary's assets by a customer or by an employee.

Excessive levels of the risks described above are the most frequently observed cause of failure among traditional financial intermediaries. A discussion of these risks and of the methods for their *ex post* measurement is widely available in the literature on finance.[29] All these risks affect traditional intermediaries and MFOs alike. The literature on finance does not recognize, however, risks that are characteristic, either because they are exclusive or consistently more intense, in the case of MFOs.

One example of such risks that is very frequent in MFOs but that is hardly observable in traditional intermediaries is what may be called **subsidy-dependence risk.**[30] Here we refer to a MFO with a large dependence on subsidies, that mobilizes savings from the public as well. The problem, from a supervisory perspective, is that reductions in the annual flow

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[29] Maisel, Sherman (ed.). *Risk and Capital Adequacy in Commercial Banks*. Chicago: The University of Chicago Press. 1981.

[30] This risk has been very high in public development banks and explains much of the recent difficulties experienced by these intermediaries, particularly those that had not actively mobilized deposits from the public (Gonzalez-Vega, 1990).

of subsidies may endanger the stability of the intermediary and, therefore, the savings of its depositors.

We have observed numerous examples of organizations that had earlier been highly dependent on subsidies and of instances when the amounts of the subsidy suddenly decreased, making the intermediary unable to cover its operational costs, leading to insolvency. The supervisor should thus be concerned with the degree of dependence that a given intermediary has on volatile and uncertain subsidies (e.g., government transfers, donor grants) and with the potential impact of their reduction or elimination.

The approach here differs from that of Jacob Yaron, in the sense that his concern with subsidy dependence is more in terms of viability or pure economic efficiency. The supervisory concern has to do, on the other hand, with risk. In this sense, the supervisor need not be concerned with equity or capital transfers from donors, because they do not increase the risks faced by the intermediary, although they may discourage savings mobilization. Rather, the supervisory authority should be concerned, for example, with budget transfers to cover staff expenses.

Another example of these differences in risk among MFOs and traditional intermediaries is given by the **external influence** exercised by donors or governments. MFOs have been subject to a flooding with funds from all sorts of donors, who have provided large amounts of cheap resources, relative to the assets of the MFO, and that demand that these funds be allocated within a fairly short period of time. Frequently, they also target particular clientele, without due concern with creditworthiness, severely reducing the organization's degrees of freedom in credit screening. All of this imposes severe credit risks on the

organizations, as it has to abruptly increase the pool of its borrowers, frequently from a narrowly defined subset of the population. Rapid and disproportionate growth in the number of borrowers is highly correlated with portfolio losses from default.

Traditional intermediaries, on the other hand, experience portfolio growth in a more gradual fashion. Time allows them to gradually adjust their loan screening techniques and the development of bank-client relationships strengthens their costumer base. Some MFOs, either because of choice or of donor influence, have not been allowed to diversify their loan portfolios and/or have not been able to select among all possible borrowers, but just from a few (credit directed to particular groups or activities). Rather than clients, these borrowers usually perceive their status as beneficiaries of paternalistic programs. These requirements have made MFOs victims of the equivalent of repressive regulation.

Traditional bank regulation and supervision may not be, therefore, effective for the surveillance of MFOs, because their techniques have been developed to prevent and to measure the risks of a conventional model of financial organization (a private depository intermediary) in very specific settings (well-developed financial markets). This implies both that traditional regulation and supervision may overlook important intrinsic risks and/or penalize MFOs because of their activities and clienteles. Examples are, respectively, the idiosyncratic risks described above and portfolio ratings based on collateral, when MFOs may rely on collateral substitutes or screening through other terms of the loan contract.

IX. Regulation of Microenterprise Finance Organizations

Depository institutions were defined in terms of the structure of their liabilities (e.g., large debt as compared to equity), of the fixed-value nature of their debt (e.g., deposits), and of the predominance of non-marketable loans among their assets. Clearly, organizations that provide loans to microentrepreneurs, funded with deposits mobilized from the public, would qualify as depository financial intermediaries, and would thus share many of the characteristics that make regulation necessary.

Nevertheless, MFOs come in a large variety of institutional designs and legal charters and function in very diverse economic and legal environments. For instance, the range of institutional designs, according to ownership, goes from financial intermediaries without specific owners (e.g., non-government organizations (NGOs) for particular purposes) to private commercial banks that have found an interesting market niche in the sector (e.g., Banco Sol in Bolivia). Intermediate organizational arrangements are client-owned financial intermediaries (e.g., credit cooperatives and village banks), state-owned banks and government organizations (e.g., Bank Rakyat Indonesia unit desas and the Badan Kredit Kecamatan in Indonesia).

The diversity of MFOs is further compounded by the diversity of the economic and legal enviroments where they operate. This is exemplified by the fact that NGOs lend to microentrepreneurs in countries as dissimilar as the Gambia and Chile, where the degrees of development of the infraestructure, legal systems, human capital, and the financial market itself are at extreme opposites. In the Gambia, where there are no formal banks, the financial distress of some large NGOs may have important consequences for the economy

at large. In the case of Chile, similar outcomes would be perceived only by those directly affected, without major macroeconomic implications.

This diversity of MFOs makes it imposible to provide a recipe that is easy to follow for the regulation of these organizations. Such a uniformity would be a "wholy grail" or imposible goal even for traditional depository intermediaries. A generalized cost-benefit analisys for MFO regulation is imposible. Just as an example, the relative scarcity of the inputs necesary for regulation (e.g., trained bank examiners) changes the costs and benefits of supervision from country to country.

More importantly, the nature of the incentives implied by each of the institutional structures of MFOs would lead to different behaviors in the presence of the same regulation. NGOs do not usually have a residual claimant of the profits (or losses) generated by their financial intermediation activities. This implies that incentive compatible regulations must be designed that go beyond simple capital adequacy requirements, which are sufficient to exert the desired behavior from commercial private banks. The resulting problems may be only partially solved by regulation.

Credit cooperatives, on the other hand, do have owners. The problem here is that these owners behave according to different objective functions and create conflicts for the organization. These owners may find it privately profitable that the organization does not maximize its profits. This would be the case of net borrowers, whose payoffs from reduced organizational profits come at the expense of net savers. These conflicts may make these organizations particularly unstable (Poyo). The rivalry among owners increases the risk of desintegration of the organization and creates increased opportunities for management to

pursue its own interests. That is, client-owned financial intermediaries may be inherently more unstable and may suffer of larger principal-agent problems than other intermediaries under similar conditions.[31]

The analysis of the institutional structure of each MFO and of the regulatory implications is beyond the scope of this paper, not only because of the length of such undertaking, but because the subject has not been sufficiently researched. Most MFOs are comparatively recent. As experience accumulates and it is interpreted from the perspective of the conceptual framework developed by this paper, useful empirical generalizations will be found. The topic is important, given the responsibility to protect microentrepreneurs who trust the organizations that mobilize their funds and grant them loans and the objective to promote healthy financial markets, where the niche of providing credit to small borrowers and depository services to small savers becomes sufficiently attractive. In particular, it would be important to avoid policy backlashes that might result from the failure of MFOs and other intermediaries that were not correctly regulated and supervised. Failures and policy backlashes would jeopardize any progress in the achievement of the objective of improving access to financial services for microentrepreneurs.

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[31] Agency problems arise when the owner of some resources (principal) entrusts their management to another one (agent) who may have an objective function that does not necessarily coincide with that of the principal. The principal has to incur in monitoring and contract enforcement costs to guarantee that the agent behaves as desired.

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